Information and Communications Technologies (ICTs) and Governance: Linkages and Challenges

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Ottawa, Canada
October, 1996.

Prepared for the International Development Research Centre, Ottawa Canada

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Information and Communications Technologies (ICTs) and Governance - Linkages and Challenges

1. Introduction

The rapid and increasing importance of Information and Communications Technologies (ICTs) to the economies, societies and governments of North America and Europe has been well documented over the past several years. It is said by many academic and popular commentators that we are entering a "knowledge age" or that we are in the midst of an "information revolution"; the suggestion being that the transformation occurring in these societies is one that could be properly compared with the industrial revolution. The entire structure of the North American and European society is experiencing a profound period of flux.

If such is the case in North America and in much of Europe, it is plainly apparent that these transformations present an equally important challenge to the economies, societies and governments of Africa and other developing areas. In fact, it is not difficult to see that the problems that face the developing world during such a period of transition, are in fact more difficult, more complex, and more confounding than they are elsewhere. At once, developing countries are faced with the same issues as nations in the North, issues that change almost daily as the very face of the networks and technologies that fall under the rubric of "Information and Communications Technologies" themselves change; and a host of other issues that both stem from, and in turn cause, their continuing lack of capacity in this field.

The purpose of this study is to highlight some of the ways that ICTs are being used in the larger effort to improve governance in various areas of the world. ICTs are widely viewed as a way to enhance the development capabilities of a nation, and many propose that the development of ICTs could allow developing areas to move more quickly and effectively into a world that is increasingly using knowledge, and communication technologies, as its main currency. That such countries may use ICTs to "leap-frog" into the 21st century may be an exaggeration. It is clear, however, that some interesting and important efforts are being undertaken worldwide, which have and will continue to have a great effect on the development and governance of societies. This study will begin with a discussion of several examples of ICT applications which provide interesting insights in the context of governance, followed by a discussion of several broad issues of concern that arise from

those examples, and suggestions for some research initiatives which might be undertaken in an effort to improve knowledge in this field.

2. Applications of ICTs - some examples

2.1 ICTs and Open Government.

In both Canada and the United States, the Internet has been developing for many years into numerous systems that are quite sophisticated, involving many people, and influenced by public and commercial interests. As the systems have developed, the governments of both countries have embarked upon plans to ensure that a wide variety of government documents and other material is available through electronic means. An early attempt at such dissemination was Canada's Open Government Project, initially sponsored by Industry Canada's Communications Research Centre. This project attempted to take the initial steps required to make government documentation both accessible and easy to find. Although it has been superseded by an even more ambitious plan to make documents available on a department by department basis, it still ranks as an important and successful model for applying ICTs to the concept of open government.

Through such efforts, a government may become more accessible to its population, and its workings, arguably, may become more transparent to its citizens. With documents available online, it is possible for an individual to search directly for the item over a wide variety of the servers, or simply to browse amongst the various (thousands, in Canada's case) documents that are online.

In the United States, a similar project, called the "Thomas" initiative (named after Thomas Jefferson) took this sort of activity one step further and placed the record of all Congress activities online, to create a type of online Hansard. The Thomas initiative is a promising attempt to make the day-to-day activities of the US government accessible to the citizens of the US. The Thomas system has grown since 1995 to include a database of Bill Text, the Congressional Record, a Bill Summary and Status Report, and historical documents such as the US Constitution, the Federalist Papers and the Declaration of Independence. All materials are fully indexed and searchable.

With regard to such programs as Canada's Open Government and the Thomas System, it is worth remembering that this type of initiative raises several legal and structural concerns which would require prompt attention. Transparent governance of the kind implied by the Thomas project is not usually legally required of a government, and may even be considered undesirable to some governments. Parameters should be set to define what types of documents are to be made public and at what point in the legislative process it is deemed appropriate to make them available.

While many governments of developed countries are engaging in developing home

pages and elaborate sites on the World Wide Web, for example, few governments in developing countries have the capacity to disseminate information and documentation electronically. A (non-scientific) survey of the Internet presence of various countries in Africa reveals that a few governments have some presence on the Internet, but many items such as policy papers and other pertinent information are not available.

Making government information available to the public is an important application of ICT to governance. By allowing a diverse audience access to such information, a government invites wider participation. One of the social barriers to access to ICTs even in developed countries, however, is a common perception among potential users of the systems that there is little information available through such networks which would have relevance for their daily lives. Policy papers may not be of mass interest, but that they are available at all certainly is important.

2.2 ICTS and Community Networking.

Community networking is one of the applications of ICTs that holds out the most promise for linking ICTs to governance. A community network is, basically, a local computer-based system that allows the people and groups within a community to share information, knowledge, and experience amongst each other in such a way that the existing organizations are strengthened. This definition is broad and encompasses many different types of systems ranging from the huge Freenets of North America (with user populations counted in the tens of thousands) to the "telecottages" that are being developed in many parts of Asia and Africa. The movement has been one that has been remarkably strong in Canada, although it is a worldwide phenomenon, with community networks currently active in some form on all continents, save Antarctica.

Community networks come in many different forms. Some are strictly local systems, and others offer full access to the Internet. Some are actually private endeavours that are run for the benefit of the community (for instance the San Francisco Bay Guardian newspaper's online service), while others (like the National Capital Freenet in Ottawa) are nonprofit community organizations with a publicly elected Board of Directors. Some community networks are home to quite a broad number of local information providers, others are more focused on a particular issue. Some have tremendous resources both in terms of people (usually volunteers) and hardware, others are run on an ad-hoc basis by volunteers using whatever equipment they can find (such as the ZAMIR networks in the former Yugoslavia, which continued to function in some fashion or other throughout the war).

A community network may seek to provide a specific group or area with the services that are required to reinforce the community politically, socially, or economically. Community networks provide access to online documents and databases of many kinds, and any group who wants to make information available usually has the opportunity to do so with minimal prior skills required. Community networks are

easy to maintain, in that although computer terminals and access points can be set up in a wide number of areas, the information itself resides in one central computer.

Community networks serve a great educational function. Often they represent an individual's first exposure to a network of any kind. They can also provide teachers and others with educational materials. They have served political functions (as described below regarding Amsterdam's DDS), as well as a social function of allowing people to share information about challenging issues, such as AIDS, and to discuss their experiences with specific reference to the common area in which they live and to the resources that are available in the area. In most cases community networks are urban phenomena, although there are several notable examples of rural community networks as well. Most importantly, these networks eliminate one of the major barriers to access: the high cost of an individual connection. Community networks commonly feature public access points in locations such as schools, libraries, community centres, or churches that allow anyone who does not own a computer or telephone to use the system.

ICTs have been applied to a number of aspects of governance, such as democracy and community-building, and have been used to facilitate conferencing and access to information.

i) Community Networks and Democracy - the example of DDS

Since 1993, Di digitaler stade (DDS), or "Digital City", in Amsterdam has made a ground- breaking attempt to place all city services online, and to create a forum where an active civic politics, distinct from the more traditional political forms, might take root. Some of the founding members were part of squatters' rights groups and other marginal groups (part of the XS4ALL - "Access for all" - collective). This example illustrates the augmenting potential for ICTs to impact on governance in a large city.

DDS places minutes of city and regional government meetings online, and also encourages political interaction between politicians and citizens. Many of the political and community groups use the system regularly to discuss new initiatives, policies and plans, both among municipal council members and members of other parties and groups. DDS is subsidized by the municipal and national governments, and although it is much like other community networks in many respects, the participation of government officials makes it unique. Some of the discussions that have occurred, for example, include a discussion by the City Secretary regarding future plans for a regional government, and the plans to develop a new international airport.

The National Capital Freenet (NCF) in Ottawa has been the site of several interesting and important experiments on this issue. During a recent civic election, they experimented with online debate, and dissemination of information about the different candidates. As well, the NCF Board of Directors elections are held on-line, and this is the exclusive forum for campaigning for positions on the Board. In February of

1994, the entire annual meeting was held online for a month, with two weeks set aside for the community to vote on the issues at hand. The vote was not binding, thus issues such as budget constraints, which may not be at the forefront of the average user's mind, could be taken into account when the Board of Directors actually passed the initiatives. The Board did use the vote in an advisory manner, and the event was a qualified success; however, in subsequent Board of Directors meetings this portion of the online meeting was cancelled.

ii) ICTs and Community building - the example of Tampines WebTown

An interesting and significant project in Singapore highlights the potential of ICTs to assist in the development of vibrant, healthy new communities. Called Tampines WebTown, the project is a government-funded attempt to augment the development of a new community by knitting together that community using an electronic network. The community, Tampines New Town (population 200,000), is one that consists largely of government-subsidized housing, and has become the focus of many ambitious projects of the Singapore government. An earlier project that installed cable connections throughout the area, set the stage for WebTown, establishing the infrastructure required for such a project.

The Webtown project itself includes the requisite Web page, but goes further to include such applications as an interactive "chat" system, an online counsellor to whom members of the community may refer, the establishment of applications that allow members of the community to book recreational and other facilities using the network, and a "community wall" where people may post essays or pictures for otners to view and read. The goals of the project are relatively simple: to allow residents to get to know one another, to allow them to get to know their leadership (including both community leaders and the local Member of Parliament), and to give residents access to a system to which they might not otherwise have access.

The interactive portion of the system is interesting in that, as in the case of Amsterdam's DDS, discussion takes place not only between members of the community but between these people and their leaders. There are fora through which questions may be asked of the local MPs, and staff is on hand to direct the comments, questions and requests of residents to the proper agency or person who could best assist them.

Several lessons have been learned since the introduction of Tampines WebTown. Some of these lessons illustrate that local community leaders should be engaged, both to make the resource more useful to its users and to provide the leadership necessary to encourage others to use the system. It is also vital to include non-technical people in the team that is developing and steering the system in order that it is useful and understandable to average citizens and not simply the technically adept. Finally, a clear organizational structure needs to be in place. Also significant, is a lesson learned during the design of the system, in that in many cases it is more useful to use text and not graphics, as graphics require more complex computing resources. These resources

are often hard to come by, making the system less accessible to some members of the community, particularly those who access it using public facilities rather than from their home.

iii) Functional networks and conferencing

Community networking need not, of course, be understood only in the sense of a physically proximate community. There are important examples of "community networks" that deserve the name because they serve a specific group, a community of people, spread over a wide area. One of the best examples of this is the relatively new MISANET in Southern Africa. Reacting to the fact that Africa's knowledge of itself was mediated through the media centres in London, New York and Atlanta, MISANET has developed as a resource to be used by Southern African independent journalists to counter the deleterious effects of such mediation. It is not simply a newswire; rather, MISANET strives to offer many of the services of any other online community, but the services are centred around the particular needs of journalists spread out in several countries in Southern Africa, including Namibia, Botswana, Zambia, Angola, and South Africa, among others.

Likewise, the Institute for Global Communications sponsors LaborNet, PeaceNet, and several other functional community networks on an international scale.
These networks, and others of their kind, serve to bring together people in order that they may share their experience and information with practitioners spread out over a wide area. This exchange is particularly useful for development initiatives since it is often difficult for people in remote areas to access academic or government texts, for example; such networks can allow the knowledge to be shared regardless of geographical location.

Systems such as The Well (San Francisco Bay), TechNet (hosted by the World Bank) and the Utne Cafe (Minneapolis), although not strictly community networks, facilitate ongoing discussions among people of diverse backgrounds on any number of subjects. This diversity, both social and geographic, allows for individuals and groups to communicate amongst themselves in ways that are largely impossible without electronic communications. As such, the argument can be made that the capacity for governance might be immeasurably strengthened, as the informed (and informational) nature of the "conversations" allows for the development of an educated and sophisticated citizenry.

It is possible to use such conferencing systems in a highly targeted fashion as well. For instance, TechNet, sponsored by the World Bank with assistance from Volunteers in Technical Assistance (VITA), has used a World Wide Web and email based system to host panel discussions on a number of very narrowly-focused topics. By organizing discussions in such a fashion and inviting expert guests to participate, they serve a community that would otherwise have to travel great distances in order to carry

on the discussion. Using such tools, it is possible to have meetings amongst people who share a specific expertise without incurring travel and other costs usually associated with meetings of this type. At the same time, the structured nature of the system allows the meetings to proceed in an orderly fashion, unlike many of the other discussion systems available on the Internet (such as Usenet, the public messaging system). These conferencing systems also all share the benefit of not requiring any technical feats of wizardry to run: they all work perfectly well on the simplest hardware and software. Such a system, run not from North America but from Africa for example, could provide an important regional centre for dialogue amongst people with similar interests, background, or expertise. With connectivity to the network on which they run limited to a single terminal in a central location, these conferencing systems perhaps may not be the ideal for wide citizen participation, but as a conduit of information between people who can then distribute it more widely, they could be very useful indeed.

iv) Community Networks and Libraries

Public libraries have been recognized as an incomparable community resource for many years, providing open access to useful information of all kinds to citizens in communities in much of the world. Although the costs associated with maintaining libraries have always been high, libraries have acted as a sort of filter, choosing which items to buy and to store on their shelves and which to leave aside. ICTs can play a role in the development of libraries. Storing information in digital form can lower the relative cost of a library while still allowing the library to serve its function in other ways, for instance as a centre for community meetings or as a place to engage in study. Community networks have, then, a great role to play in that they allow for easy and efficient distribution of materials usually found in a library, to many areas where it would be prohibitively expensive to house them otherwise. At the same time, the public nature of many libraries ensures that the resources available there, including access to the network, are available on a broad basis.

Steve Cisler, of Apple Computer's Library of the Future program, is convinced that the traditional function of a public library as a community centre will be indispensable, as community networking is developed in areas of the world where the infrastructure will not support the same type of involvement in community networks as in North America (where the focus has been largely on to-the-home connections to the network). His opinion is based on the observation that in libraries, the traffic patterns of a community and the culture of support brought by information professionals is such that the benefits of ICTs can be widely realized. In fact, to Cisler and others working in the field, it has become apparent that Community Communications Centres (CCCs) are an indispensable facet of the community networking endeavour, for reasons of infrastructure, and economy. CCCs provide a useful link between community interaction and the use of ICTs, thus bridging an important gap by allowing community networks to complement, rather than replace traditional interaction.

2.3 Government efficiency and economic benefits of ICTs.

Governance is a highly information-intensive, and therefore expensive, activity. If ICTs are seen as an efficient mechanism to aid in cutting the costs associated with generating and disseminating this information, and thus governance, more ambitious and useful programs might be implemented, thus facilitating the role of government as a partner of industry (and vice-versa). In Canada there are several programs worthy of some note, such as the Open Bidding System, which recently went online. As well, in Brazil and Morocco, and elsewhere, various attempts have been made to engage ICTs in interesting ways, contributing to efficiency.

The Moroccan example is instructive in this regard. Morocco's Public Administration Support Project is an effort to use ICTs to enhance the efficiency of its Ministries of Finance and Planning. Such functions as tax administration, auditing, public investment planning, and monitoring have been carried out with the use of computers and computer modelling to assist with expenditure management, resource allocation and collaboration between different ministries involved in economic management. The coordination of the activities of different ministries is also enhanced by the use of ICTs, as the information on their activities is more readily available to other parts of the bureaucracy.

According to a World Bank report on this case (presented at the Internet Society conference (INET96) held in Montreal in June), since the project began in 1989, the time required to prepare the budget has been halved. This is just one example of the efficiency gains that are possible when ICTs are used in this capacity. As well, improved information collection and storage increases the potential for a government to use its knowledge wisely, by submitting plans to extensive analysis in a more timely and comprehensive fashion than otherwise might be the case. Such attempts to collect data in a comprehensive manner is also beneficial to the public more directly. In the Moroccan case, demographic and other information has been made available to people, not just to the government bureaus that collect and use it.

Similar uses of ICTs have been documented in a wide variety of countries, including: Colombia, the Philippines, India, Egypt, and Chile. Chile, for example, has embarked upon an ambitious project to connect schools and teachers throughout the country using computer networks. Chile's Enlaces Project began as a pilot program to provide educational software and training to teachers, particularly in poorer parts of the country and areas with high indigenous populations, away from urban centres. The locally-produced software package called "La Plaza" became the most widely used part of the program, a package that provides email functions, a document storage and retrieval system, and other useful applications. The use of this package has benefitted educators by allowing collaboration among teachers and greater use of limited resources. This project enhances the teachers' ability to educate effectively and to develop the skills required to continue to improve teaching methods, thus improving the educational system itself. The project has since been expanded throughout the

country, now connecting over 400 schools in all regions of Chile, including areas whose infrastructure does not make such connections a simple matter. The technical flexibility of the system, which uses standard Internet protocols, is an important factor in its success. About a third of Chilean public schools are located in areas with no telephone service, and they have achieved some success at using standard protocols in unique and interesting ways, allowing the benefits of the system to reach a wider area than would otherwise be possible.

2.4 ITCs and NGO Support

Just as governance is an information-intensive activity, so is the activity of other agencies who work in an area at the request of a host government. The Association for Progressive Communication and their Canadian member, Web/NIRVCenter, have been greatly involved in setting up networks in countries in Southern Africa in order that organizations working there might have the best information in a timely fashion. Likewise, the United Nations Development Programme and the World Bank have conducted experiments along these lines.

One important project that has recently begun was described as follows by the contractor:

"The U.N. International Institute on Research and Training for the Advancement of Women (INSTRAW) is currently engaged in an exciting project called "Empowering Women Through Computer-Mediated Communication Technologies", which hopes to reduce the gap between information "haves" and "have-nots", and use instead the new technologies as tools for achieving greater equity."

An important factor to note about this project, is that it is not essential that networking be used at all phases of a project. In this case, they anticipate that much of the delivery of information to people working in the field will occur through more traditional means. However, as with the examples of functional networks suggests, the type of information that can be distributed using those traditional means can be significantly augmented by the use of ICTs in its initial preparation. Another project that highlights this principle is the collaboration between Project SCOPE, a US-based networking organization and UNAFEZA, an organization in Zaire that works for the civil and human rights of Zairean women. UNAFEZA undertakes many projects to empower these women and move women into the political and economic life of the country, by promoting economic autonomy, community organization and increasing the health care resources available to women and children. The role of Project SCOPE has been to complement a much broader initiative by developing community communications centres that will help with the other efforts by enhancing training, information dissemination and communication among different groups working with UNAFEZA. The focus, however, is on the benefits which accrue to the larger project by the use of

such resources, illustrating that ICTs can, and perhaps must, be properly situated within a broader context and not simply be stand-alone projects.

Furthermore, for all of the discussion of electronic networking, whether at the community level or within government, it should not be forgotten that perhaps the most cost-effective and useful application of ICTs, at least in the short term, is the continued development of strong and vital community radio stations. The technology is cheap, radio is simple for the user to operate, and the airwaves are a cheap medium of transmission. Radio technologies are already relatively well-developed, and there are many organizations working broadly with this application already (AMARC, the international umbrella organization for community radio stations, has an office in Montreal). Significant benefits to governance can accrue from a well-informed citizenry, and radio is an excellent manner to pursue that goal.

3. Challenges to Developing ICT Capacity

ICT is a complex and pervasive phenomenon. The development of ICT capability in developing countries raises a wide range of issues. Some of the more important considerations related to governance, such as access, infrastructure, education, social and legal issues, are discussed below.

3.1 Access

Access is an interesting problem in terms of the hardware and software that together form the basis of any ICT application. It is also critical, to take into account the underlying infrastructure problems that are endemic to the regions in question as well. It is a difficult balancing act: to at once promote the immediate use of ICTs in the community and for governance applications, but at the same time to attempt to put in place the infrastructure that will allow a measured growth of the availability of such applications in the longer term. It is far from clear how what we currently know as the Internet will evolve. If some proprietary system or other were to become the standard at some time in the future, it is unclear what that might mean to any endeavours undertaken now. As well, some of the most commonly discussed applications of ICTs in the developing world rely upon just such proprietary systems (such as computerized voting), the development of which would almost certainly divert funds from other, more open systems that could be of greater benefit to more people.

In order to come to terms with the complexity of the access question, it is instructive to break it down further into components which include infrastructure, education social aspects of access.

i) Infrastructure

It is obvious that infrastructure is an important impediment to any development of ICT applications, whether concerning governance or any other application. Not only is the island of Manhattan home to more telephone lines than exist in all of sub-Saharan Africa (not to mention cable systems and satellite facilities), in many developing areas it is also all but impossible to guarantee an uninterrupted power supply, which would be a precursor to developing all-encompassing network connections.

Although an all-encompassing network has been the development path in North America, it needn't simply be mimicked in the developing world. While that might be ideal, for the development of many of the applications mentioned above, there are alternative options which could be useful, as the Chilean Enlaces Project instructs. Often, it is a question of appropriate technology and timing; for example, it may be more efficient and useful to implement a system that has relatively few connections but is reliable.

ii) Education

Another significant barrier to the use of many ICT applications is that the systems proposed presume a level of education and literacy that is often unattainable by much of the world population. A lack of literacy can constitute an insurmountable barrier to the use of many ICT applications. While basic literacy problems may pose certain barriers, the fact that the lingua franca of much of the computerized and networked world is English, means that even literate people may not be literate in the language of use. Many of the ICT applications that could be implemented in the short term may be technically unusable by populations using a non-Roman alphabet, although more and more people of diverse cultures are learning the English language. It is expensive, however, to develop localized versions of all software, and therefore the literacy issue persists even in societies which are highly literate in other languages.

Literacy is certainly an issue in both developing and developed countries, and not only basic literacy, but computer, telecommunications and/or media literacy as well. Most ICT applications could be useful in developing areas, if people had the capacity to access and develop the technology and knowledge necessary to tap into the wealth of information and resources available electronically. However, if the basic maintenance of the systems requires highly specialized skills, people who might most benefit would essentially be dependent on finding a skilled administrator to be responsible for the upkeep. Thus, there is much to be said for engaging in efforts to build and to institute ever-simpler systems that are more easily maintained by non-computer-literate individuals in a community.

Finally, while some of the most innovative uses of ICTs in communities may involve such applications as distance education, and may ameliorate local school facilities, it must be stressed that ICT applications could never completely replace teachers and schools. Rather, ICTs can allow a teacher to access resources and information in a much

broader fashion than ever before. In fact, it is plausible to imagine that even a very small school in a remote community could have an extensive library at its disposal.

iii) Social Issues

In addition to the questions of infrastructure and education, other social barriers constitute more pervasive barriers to accessing ICTs. Gender, class or ethnic inequities may prevent large segments of society from using ICT applications, and from making the very decisions about which applications are to be developed and implemented.

The question also arises, of whose needs are being met by the development of ICT applications. For instance, an electronic network that can facilitate communication between and among remote communities is an interesting ICT application; however, if the communities themselves do not understand or support the utility of the application as a tool to improve relations and services in the community, then the technologies could fall prey to disuse and neglect. Similarly, while a highly commercial model may constitute a less expensive avenue for governments wishing to develop ICT applications, the system could simply be result in little more than glorified television, spreading a rather consumerist worldview that might not "speak" to local communities in a useful fashion. Thus, it is important to determine whether the applications fill a need articulated by local users of a proposed application, or one perceived by governments or populations in large urban centres. Electronic democracy may be a worthy goal in and of itself; however, one must question who makes the decisions regarding how ICT applications are developed and implemented to that end.

3.2 Legal Structures.

Issues regarding legislation and regulation pose mounting challenges, as ICT applications continue to be developed in many areas of the world. The expansion of this industry will require the formation of regulatory frameworks in which this growth will occur. Also required, are constitutional or legal frameworks, referring to local legislation on such issues as intellectual property (copyright and patents), freedom of the press and freedom of expression, privacy rights and related issues.

Regulatory frameworks will become increasingly important, so as to ensure that ICT systems and applications are developed in such a way that both international and national considerations of interconnectivity are addressed. For example, mechanisms are needed which allow linkages between regional or national networks, and global networks. Also, networks will have to be accessible to areas possessing vastly different infrastructure capabilities, and should be free from undue pressure and influence from private firms or individuals. While there has already been a considerable amount of work done on this issue, it remains an important one to address, as countries are increasingly interested in harnessing ICT applications for their benefit.

Constitutional issues surrounding the application of ICTs to governance are also particularly relevant to governments around the world, particularly in developing areas. The experience in North America, Europe and in countries such as Singapore and China shows that these problems are neither simple nor clear-cut. In nations that have been at the forefront of communications technology development, such as the US and Germany, there have been ongoing debates about many questions relating to freedom of expression, and freedom of speech, for example. Some governments have attempted, with varying degrees of success, to limit the ability of citizens to use ICTs for certain purposes, most notably for distributing pornography, for example. China, in its attempts to join the international network yet retain control over some types of expression, has undertaken to put up a massive "firewall" - an intermediary system that would allow the government to monitor all communications coming in or leaving the country. Singapore has taken similar steps, publicizing the fact that the police will prosecute anyone using the network to spread anti-government information.

A certain balance must be struck between the need for legal or regulatory frameworks, and the ideals of freedom of expression. The misuse of ICT applications, such as to spread pornographic materials and hate literature for example, has drawn a great deal of attention and criticism, and does call for an attempt to establish some rules of play. However, if some of the key applications of ICTs in the field of governance will be used to develop community access to networks, it will be difficult to achieve success if people feel unable to use them freely, without fear of repercussions.

The legal status of intellectual property is another issue that requires a great deal of consideration and attention. If intellectual property regimes are not well designed and enforced, it will be difficult to develop partnerships, trading relationships, and foster the exchange of information. A recent example occurred in early 1996, when the US threatened to withdraw Most Favoured Nation trade status from China, due to the software piracy industry that thrives in China. The issue of intellectual property, however, is one which imposes responsibilities on developed and developing nations alike. A common complaint of developing nations is that it is impossible for them to successfully join a world economic system in which rules such as copyright effectively exclude them.

Finally, related to the issue of intellectual property, is the question of who owns material in online databases. In North America, for instance, the company that designs and produces the database essentially owns the material. Although the material may be public record (in the case of court documents, for example) it is of little use without the key words and indexing markers that allows for information to be found in the first place. Since these markers are the copyright of the producer of the database, much of the public record is only available for a fee. In developing areas, where many if not most documents may not yet be available at all in electronic form, it may be attractive to develop partnerships with firms wishing to implement similar plans; in fact, there may be no obvious alternative. This is one case in which it would

serve governments well to consider the model used in North America and perhaps develop an alternative.

3.3 Focus and Priorities.

Underlying all the foregoing issues, is that of the priorities of a nation interested in developing various applications of ICTs. As the ICTs are increasingly applied to public use, there will be many competing interests to consider. A clear sense of priorities helps to ensure that focus is retained and the values important to the country in question (ie. cultural integrity) remain clearly delineated. If priorities are not made clear, then a contribution toward the development of ICT capacity in a developing country might also involve an initiative to help make these priorities more explicit.

4. Possible areas for future research

Since this study of ICT and governance has been very preliminary, we do not propose here a full-blown research program. The development of such a program would require more time and resources than were available for this project. However, in the following paragraphs we suggest a few directions which might be worth exploring if a more ambitious initiative liking ICT and governance were to be undertaken. Some of these suggestions are specific to the question of linking explicitly ICTs to governance, and others are broader in scope; however, all would contribute to increased knowledge and information in this field.

One possible area for further research might be to develop an framework for collecting the information that exists in this field in a central site that would be of use to other researchers and practitioners around the world. Although information on this subject is plentiful, there is no one clearinghouse where the efforts of people working with these problems and opportunities can be compared using a single set of criteria. Since the field is relatively new, and in view of the nature of ICTs, it may well be appropriate if this information were collected on a global level. It could then be possible to harness the experience gained by others, wherever their successes occurred, for the benefit of new projects worldwide. Since this filed is a growing one in North America, just as in other countries, such a clearinghouse could have value here as well as internationally.

Another possibility for fruitful research might be to develop the historical record of the uses of ICTs in a much broader manner than has been done so far. It is only in the early- to mid-1990s that ICTs have begun to receive more serious research attention. Thus, the history of their development is incomplete. Without a proper historical record, much of what has been published remains largely speculative. Where, for instance, are the histories of networking that concentrate not only on the Internet and its predecessors, but upon the corporate networks that allow remote management of far-off manufacturing plants from head offices in the United States or Canada? Other than Max Weber's and several Imperial British descriptions of the paper trails that

were required to manage far-flung bureaucracies, which are of little practical use in today's context, there is very little in the way of comprehensive histories about how private networking has changed the face of international trade and commerce. What is the likelihood of developing a critical mass of educated and skilled local managers of factories when much of their previous functions can be replaced by people at a head office in a city in North America?

A third, possible area for research might focus on which applications are seen by local people to be of the most use. Such research could take place in any number of ways, using surveys or pilot projects, and developing basic software interface design. It may be, for example, that the Desktop, the defining metaphor of many ICT applications currently, might not be tremendously useful globally, for instance. Separate from the issue of appropriate technology in linking ITCs to governance, is the fact that some data are more easily available in Europe or North America than in the very nations the data describes. Satellites allow for the collection of incredibly sophisticated data, and computer modelling enables researchers to use that data in ways that could only be dreamt about several years ago. How might such data be made available to all nations? Defining how to approach this area would be a research project in its own right.

5. Conclusion

The purpose of this study has been to provide an overview of some interesting ICT applications which bear upon or affect governance, and to review some of the issues which arise when ICTs and governance are linked. We have also reflected in a very preliminary way, on some of the areas where further research might be beneficial. However, we emphasize that these thoughts are tentative, and the articulation of a properly framed research program would require more time than was available for this brief project. We hope, however, that this introductory paper will prove useful in helping to frame this complex subject and in suggestion directions for subsequent work in a field of considerable importance to future economic and social development.

APPENDIX I

Organizations working in the area of ICTs and governance

Some of the organizations involved in developing policy and research on the subject of ICTs and governance are the following:

Centre for Democracy and Technology, (US).

Electronic Frontier Foundation, (US, with loose associations with "Electronic Frontier" groups in many countries).

Computer Professionals for Social Responsibility, (US, but with a global scope).

Leland Initiative (sponsored by USAID, a project to develop policy frameworks, and Internet Service Provider industry and develop useful applications in sub-Saharan Africa).

Canadian International Development Agency (CIDA has developed expertise in many applications of technology development and sponsors workshops on this subject, the most recent prior to the INET96 Conference in Montreal, June 1996).

ToolNet (Netherlands, involved with many technology transfer initiatives).

Association for Progressive Communications (and member organizations such as Web Networks, the IGC, GlasNet, etc. undertake a whole range of initiatives, from basic networking to high level research).

World Bank, Telecom and Informatics Division (Research and support for ICT applications around the world).

International Telecommunications Union (the chief international regulatory body has been involved with all aspects of ICTs and development for years).

U.N. International Institute on Research and Training for the Advancement of Women (INSTRAW, as described above, have recently begun an ambitious project to link women's groups using ICTs)

APPENDIX II

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